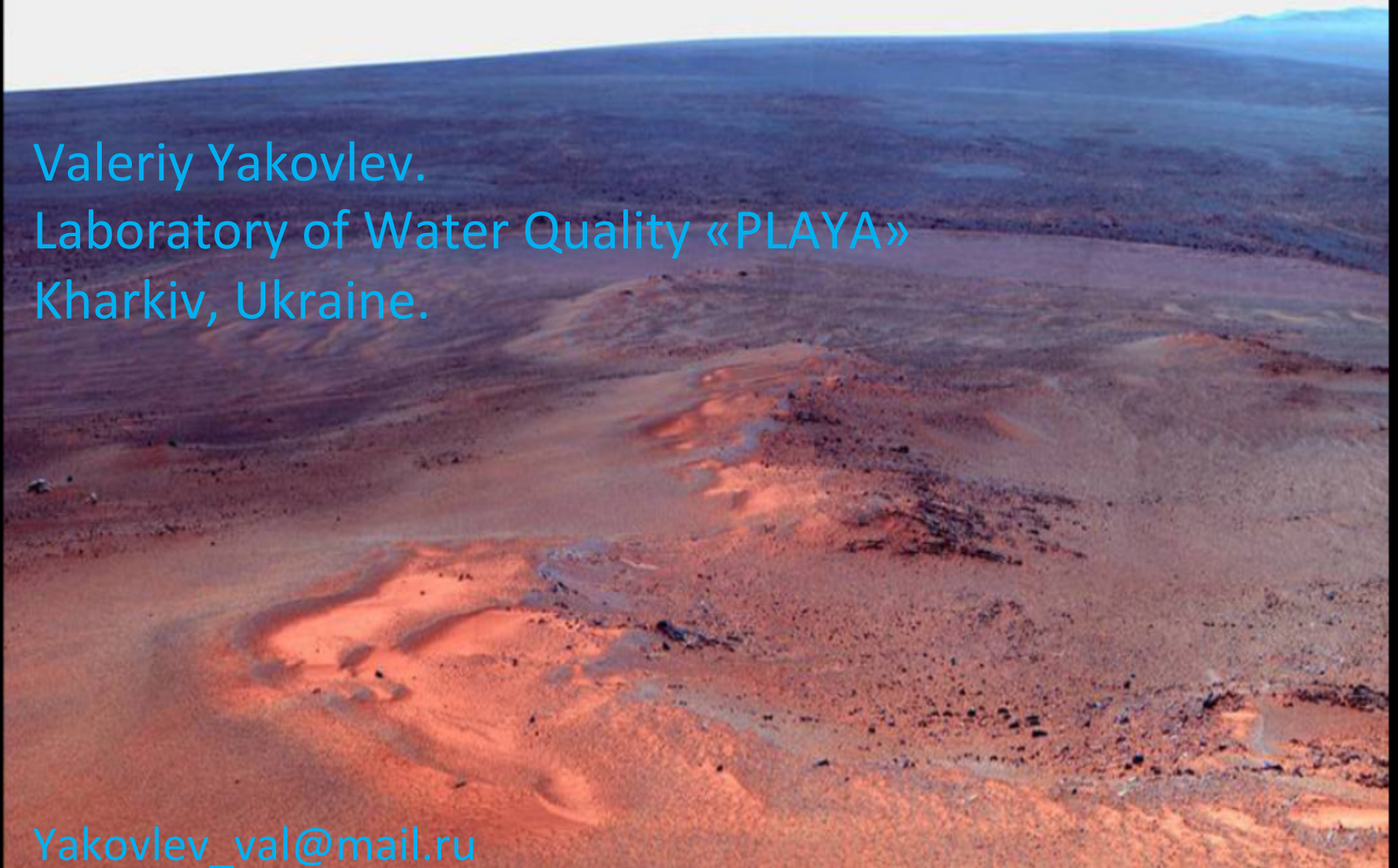


# ZEPHYRIA PLANUM HILLS - A SOURCE OF DEEP RESOURCES

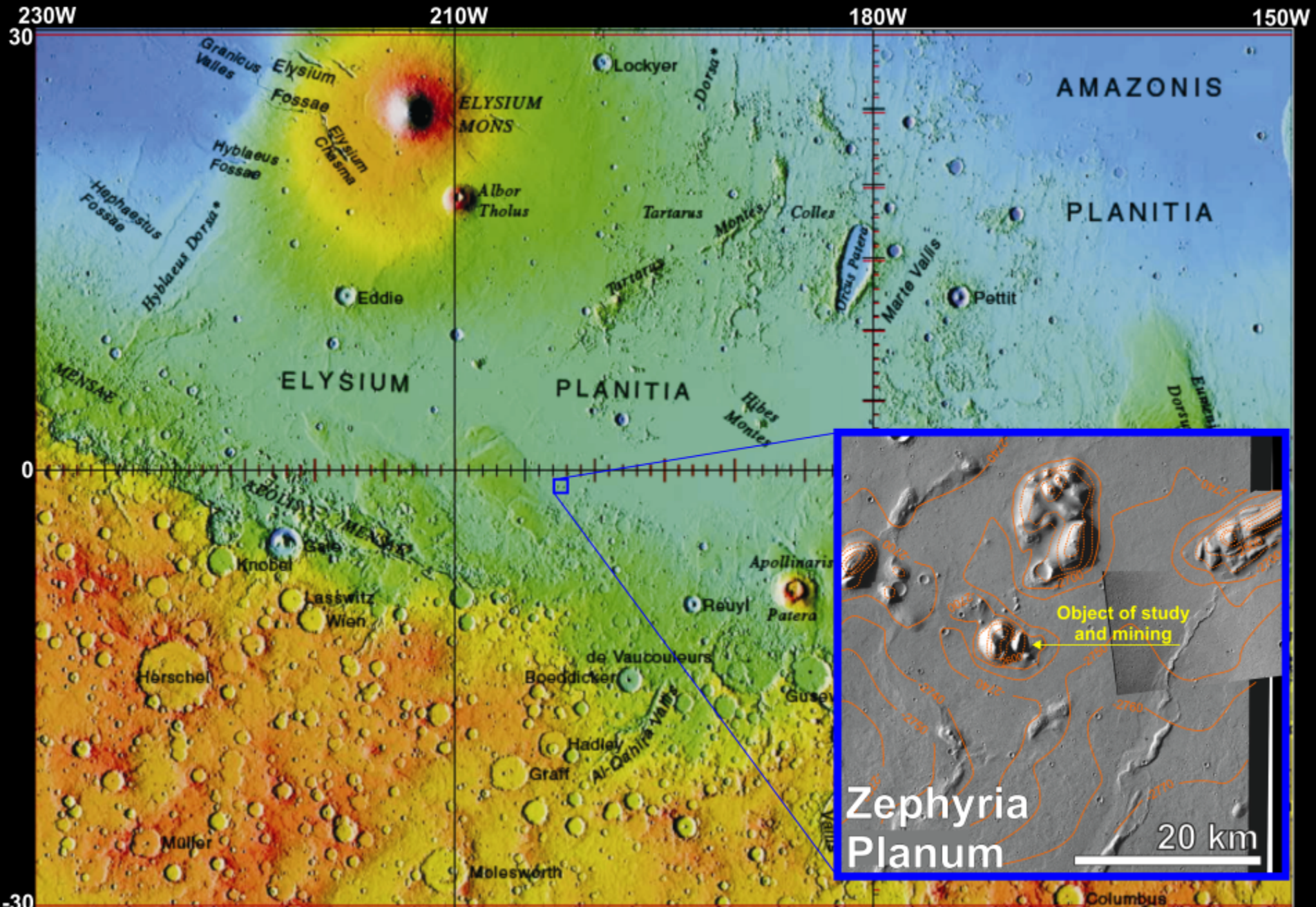
Valeriy Yakovlev.  
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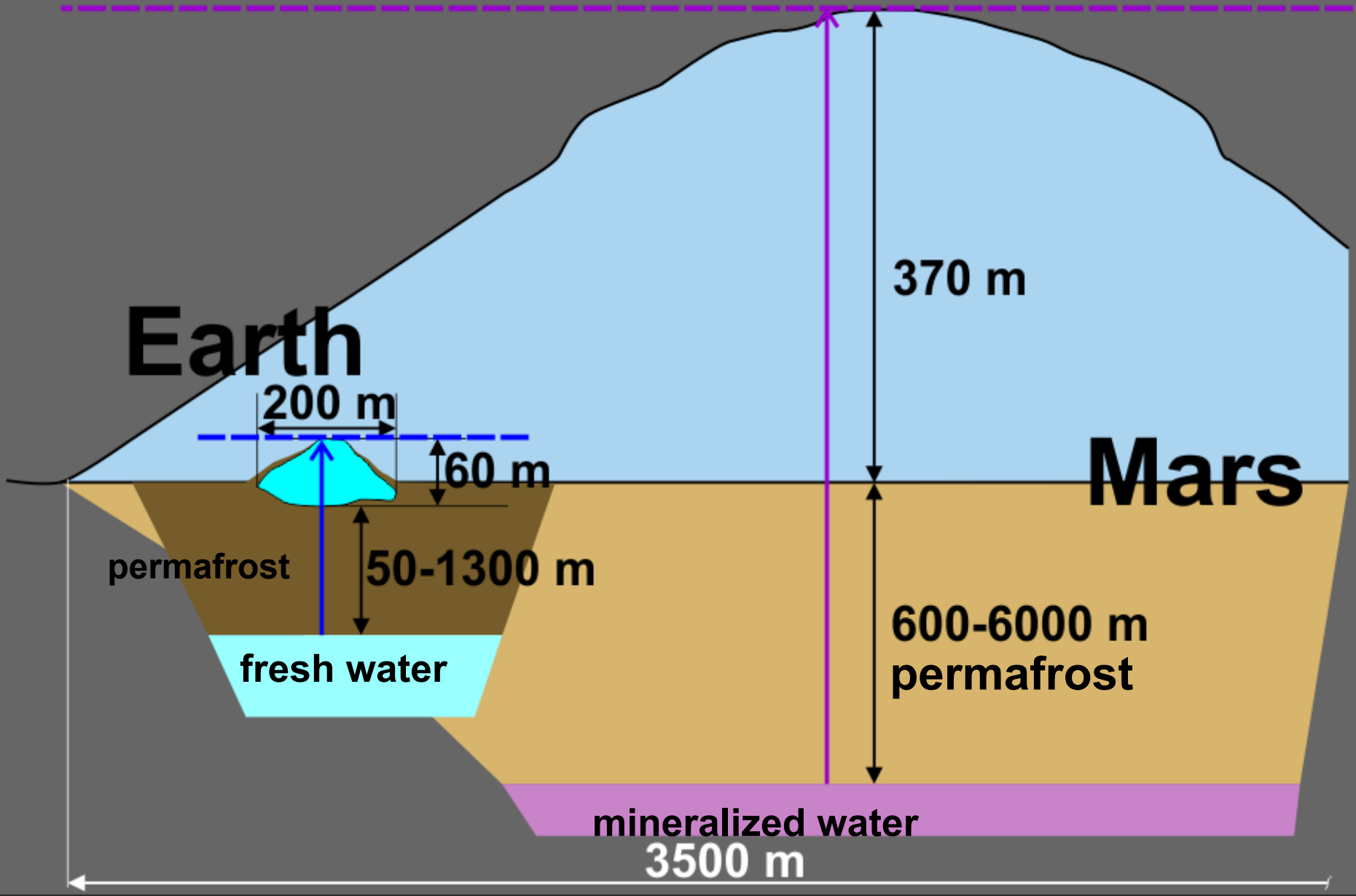




**Zephyria Planum** – is an equatorial plain stamped -2700 m, and an average temperature of the surface soil is around -40°S

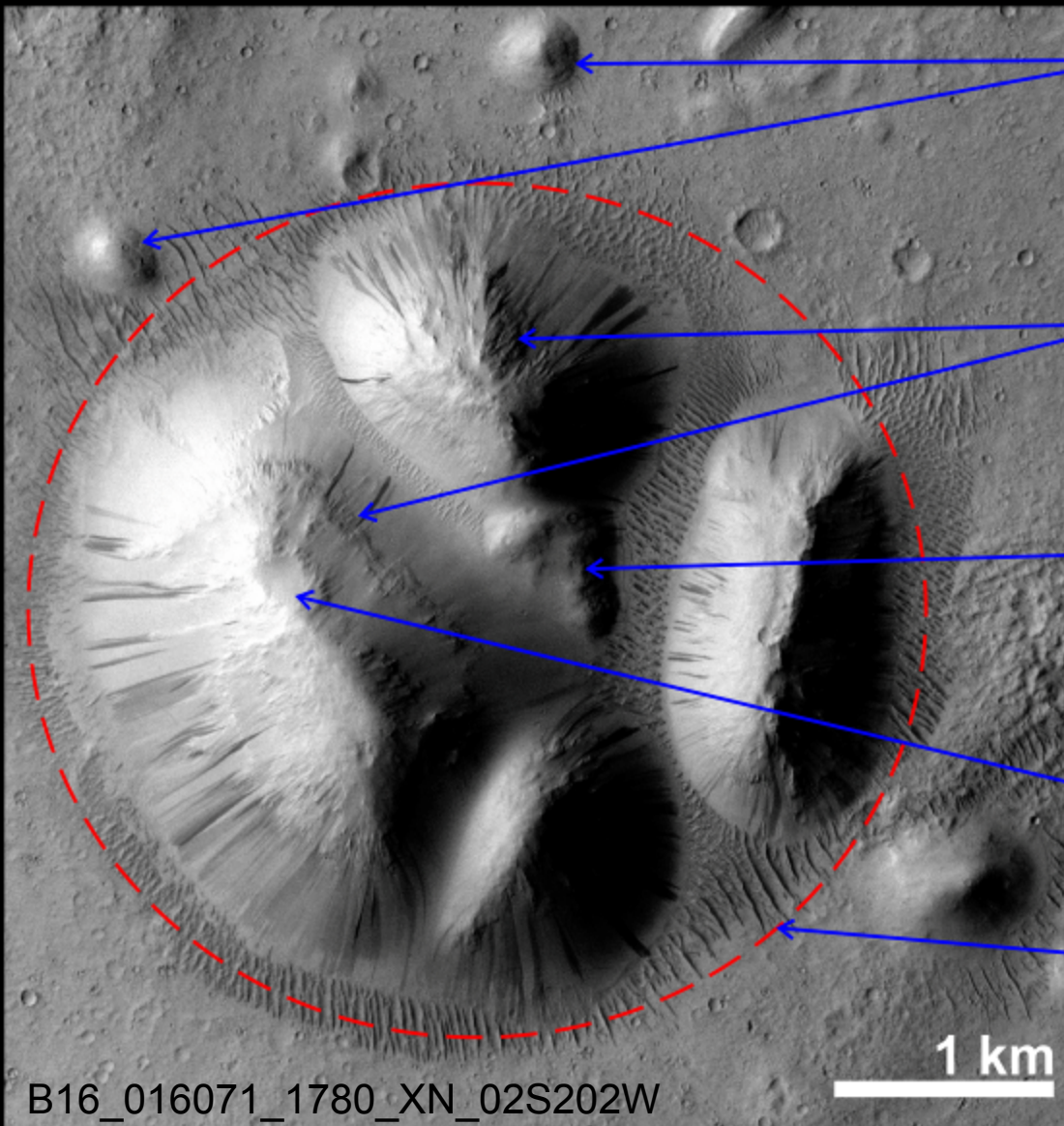


# Correlation the size of Earth and Mars hydrolaccolith





# The geomorphological features of the injection origin of hills



Small hills have the appearance of pingo

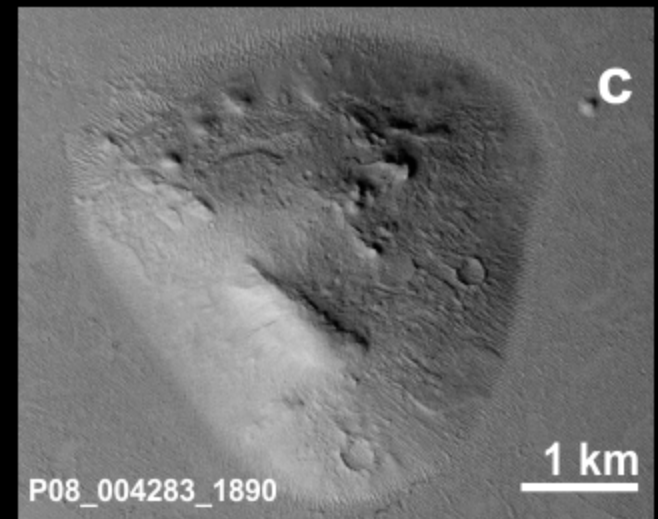
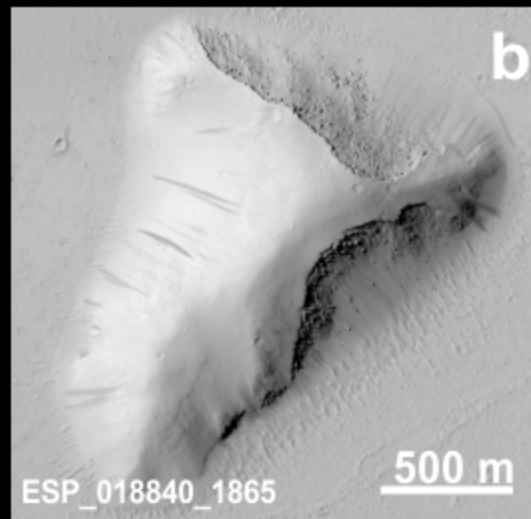
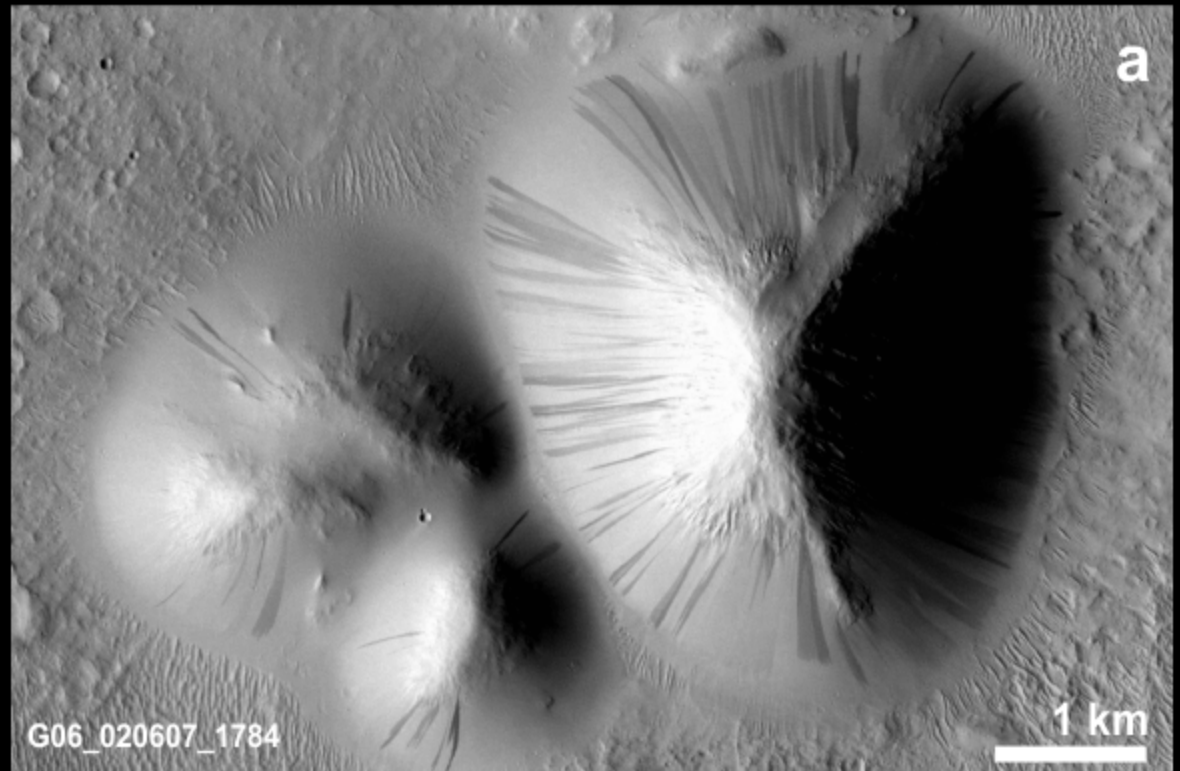
The sprawling of arrays and the lack of debris down the slope indicate the plastic and sublimating material, which can be crystal hydrates and ice

The formation of such secondary form is possible only with water flowing down from the hills in the saddle since the rise of a surface with preservation of relief and tightness can be ensured only with a platform of ice with water under it

Depressions can be the result of subsidence of downstream chambers with a liquid

The hills form a circle, which indicates their common roots

## Stages of the evolution of big hydrolaccoliths (BHL)

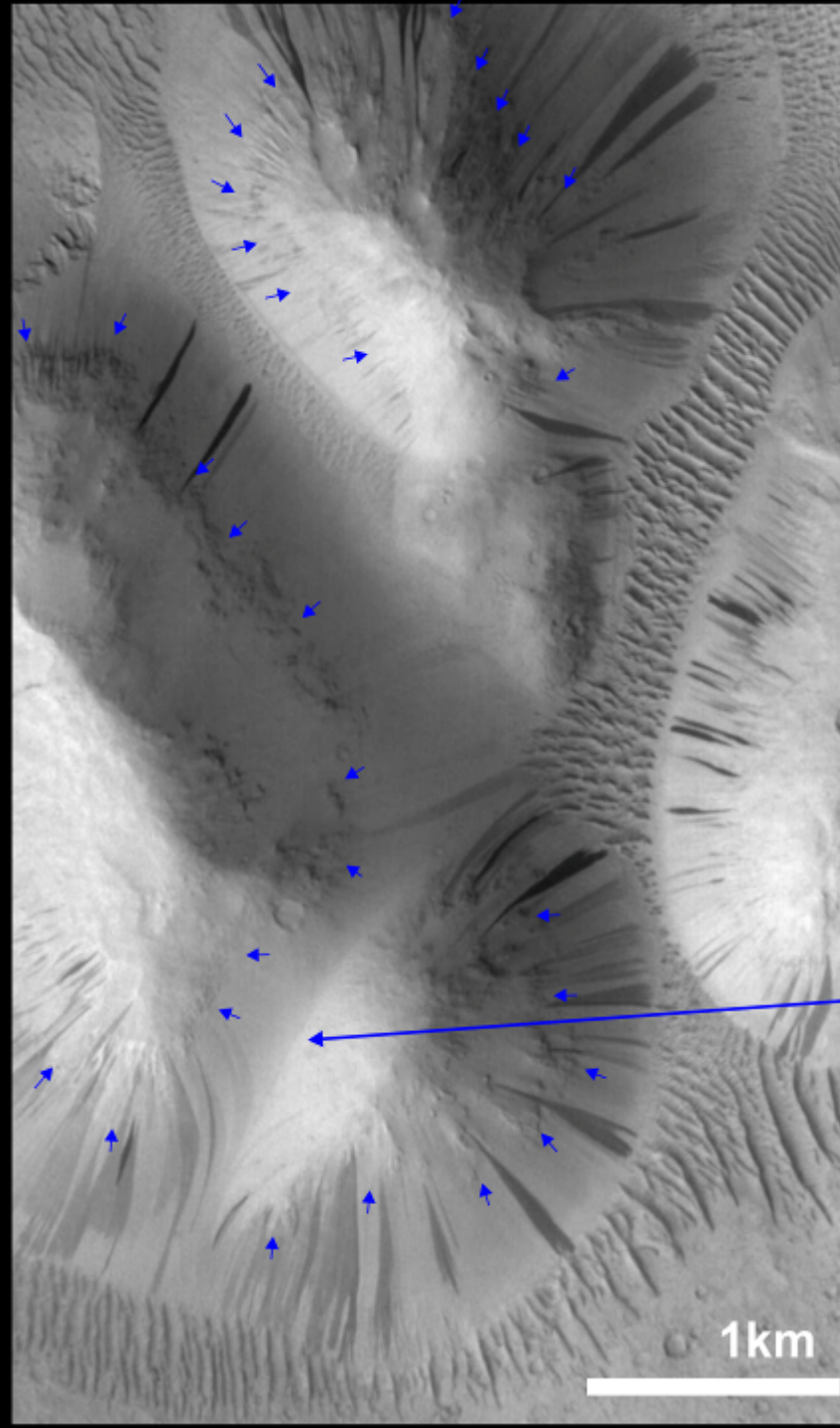




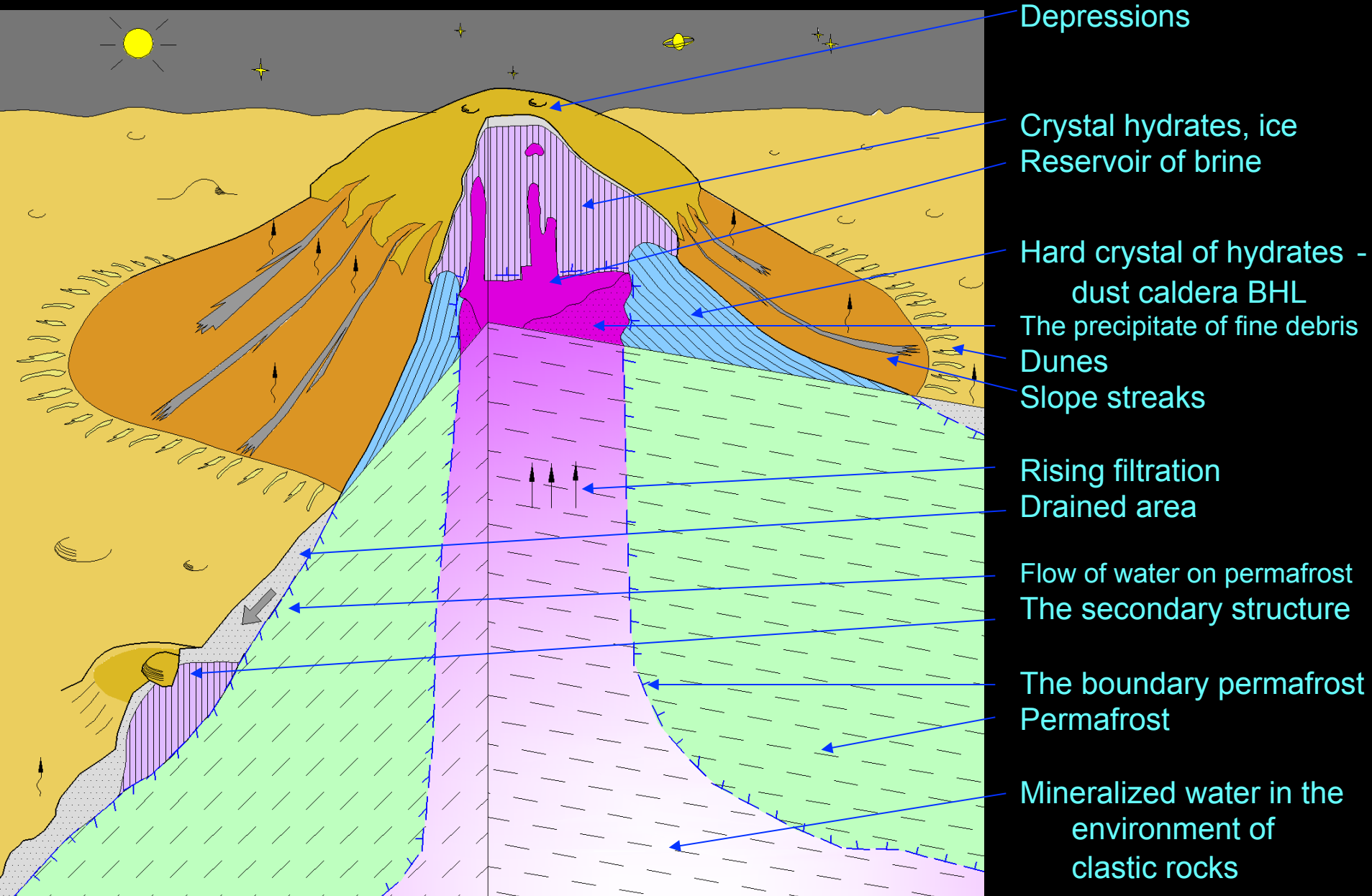
## Signs of recent activity of BHL

A distinct boundary of erosional and accumulative forms indicates younger years or a steady increase in the central parts of BHL

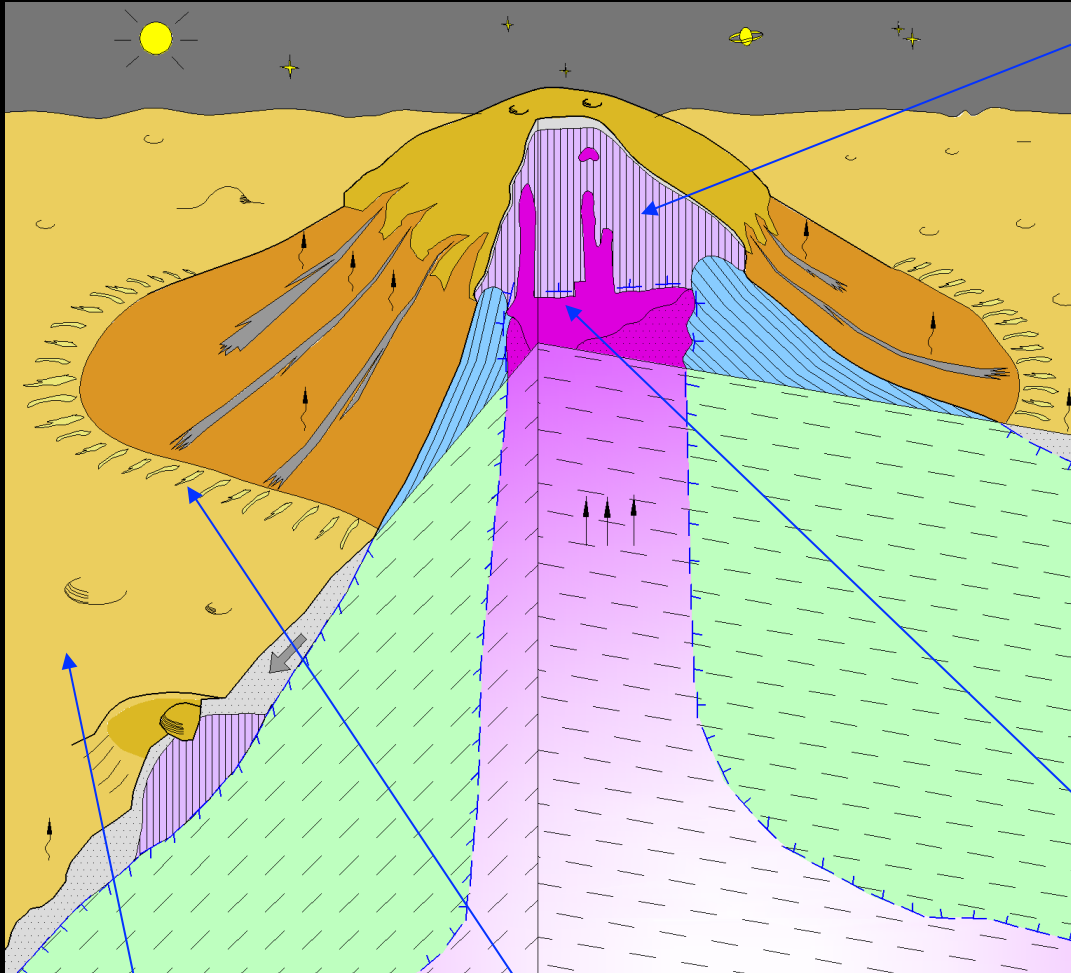
Such a line of the saddle is only possible at a constant admission of the demolishing material from the growing hills



# The alleged structure of BHL



# Resources for colony



## Water

Likely hydrated salts are :

- magnesium perchlorate  $\text{Mg}(\text{ClO}_4) \cdot 6\text{H}_2\text{O}$ ,
- antarkitsit  $\text{CaCl}_2 \cdot 6\text{H}_2\text{O}$ ,
- Gypsum  $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ .

Even the first step of partial dehydration releases 16,5-17,5% of the water of these minerals.

The volume of Hedgehogs (Mother, Little Son, Father and Daughter) is 1.05 km<sup>3</sup>, the volume of water-rich crystalline hydrates in them is 0,43 km<sup>3</sup>, and water which is easy to extract is 0,073 km<sup>3</sup>. This would ensure the colony of 10 000 people at a rate of 40 liters / person per day for a period of 500 years.

**Dust** is a good natural insulator for shelters

Dune **sand** can be a versatile Dune sand can be a versatile building material that requires only a bonding agent

**Dust and sand** are bought from outside and should contain Fe, Al, Si, Ti, Mg

**Brines** - an additional source of water as well as Mg, Ca, Na, Li, Cl, Br, I, CH<sub>4</sub>



## Scientific potential

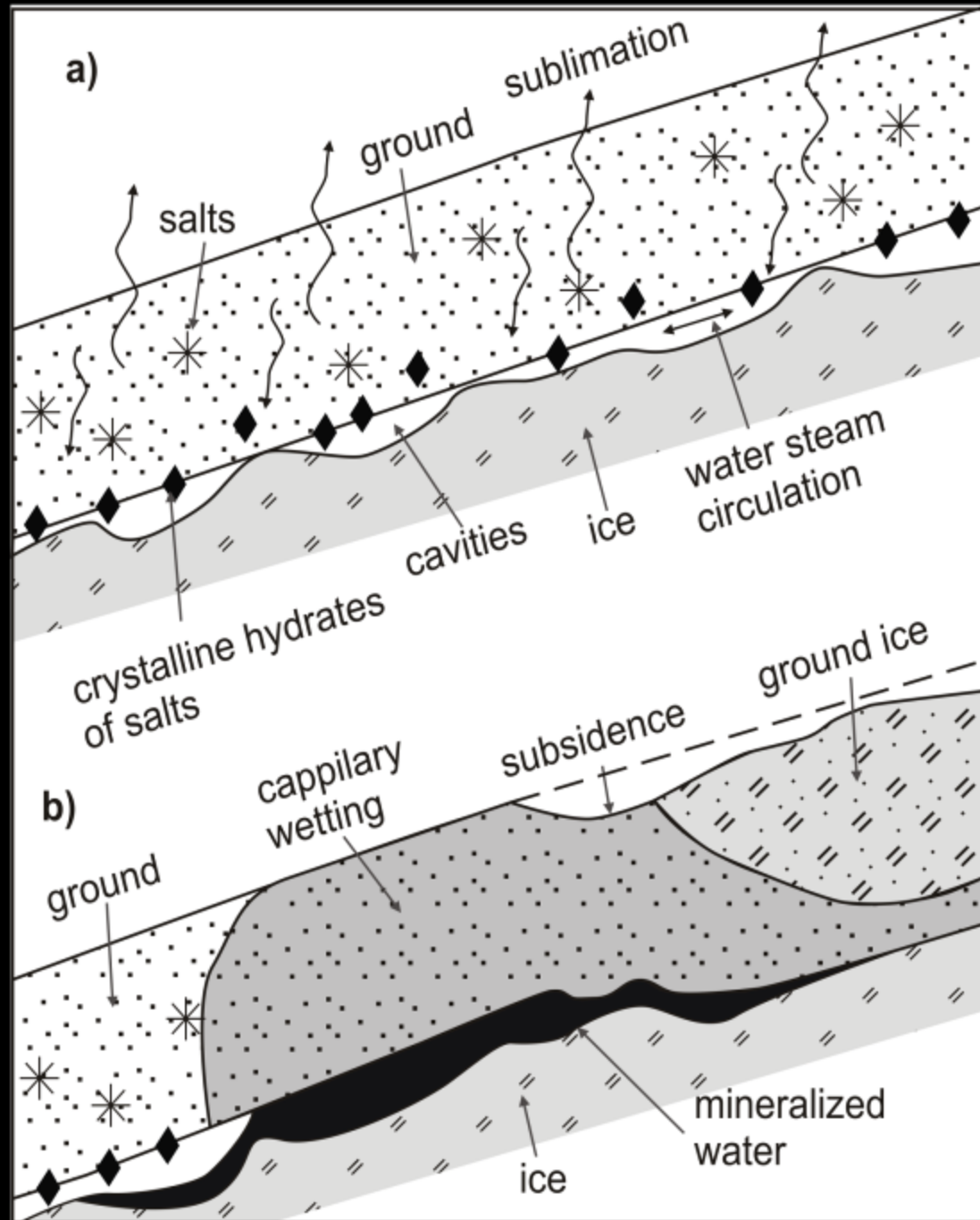
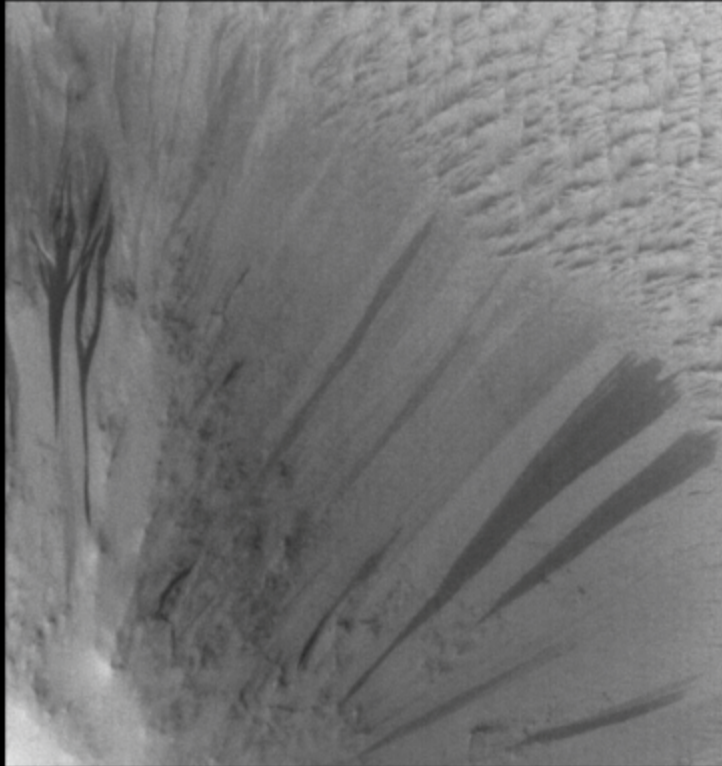
Maybe it's not lava but  
crystal hydrates  
overlying ice?

The most recent  
material from the  
depths can give  
information about the  
presence of life

Elysium Planitia

G19\_025499\_1789\_XI\_01S200W

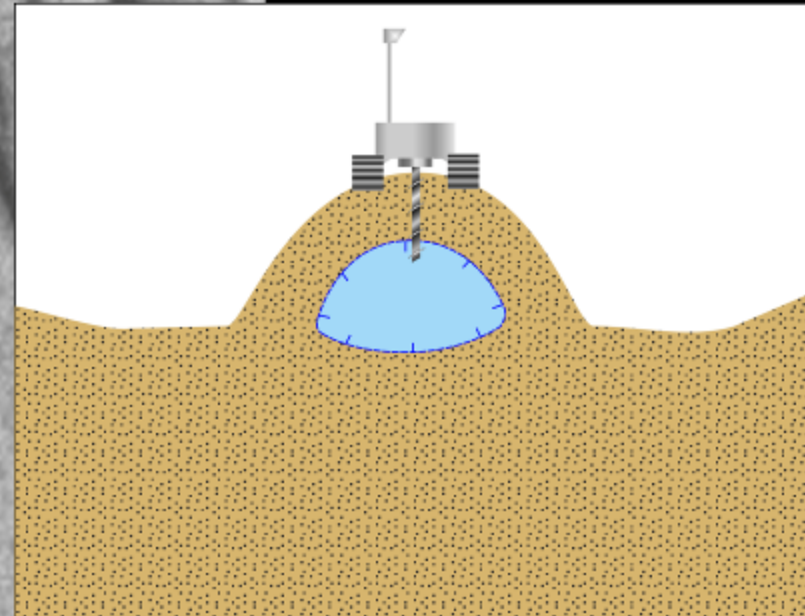
# Slope streaks and proposed mechanism of their formation





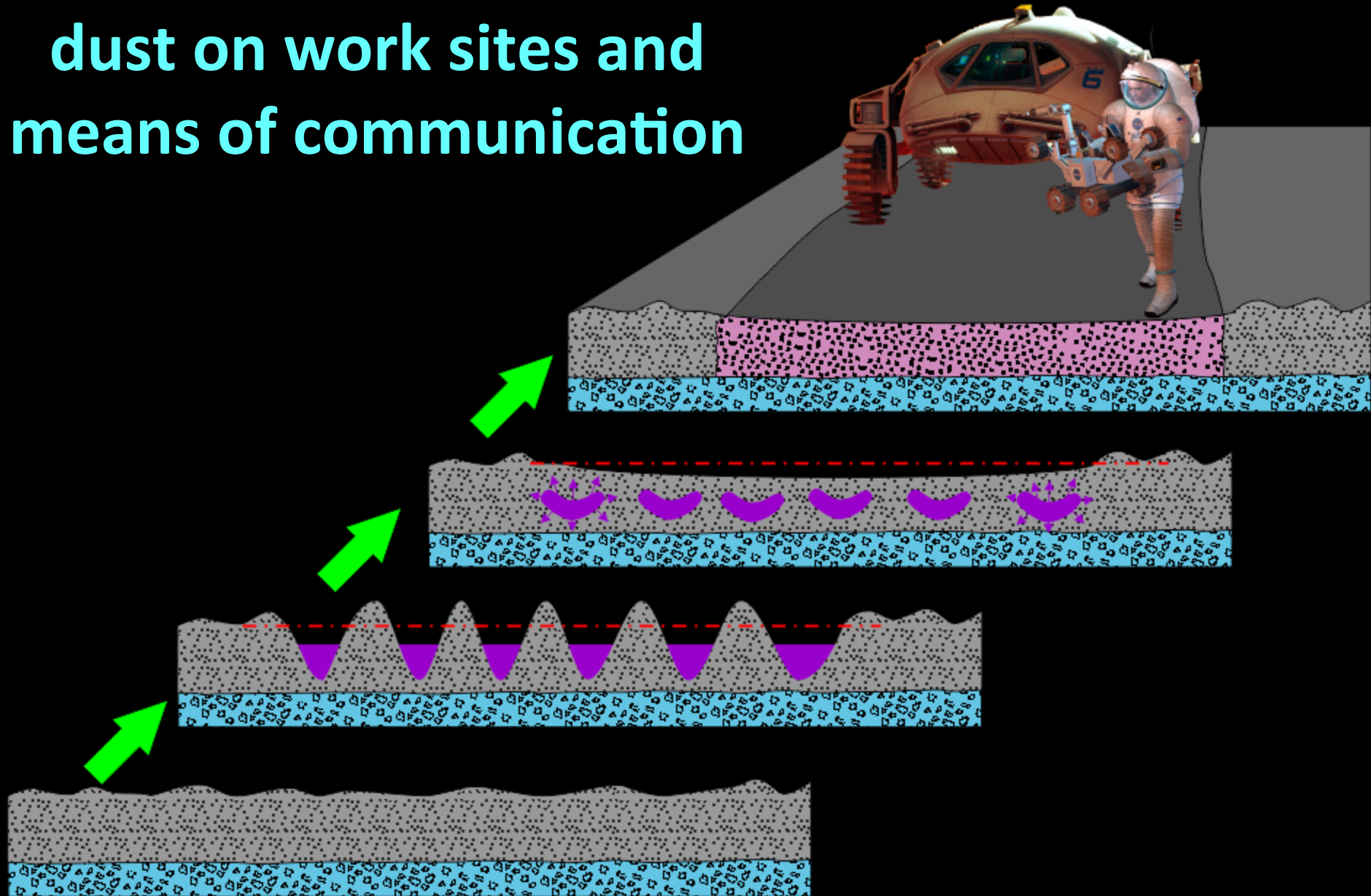
500 m

**Dunes may  
contain  
fresh water  
condensation**

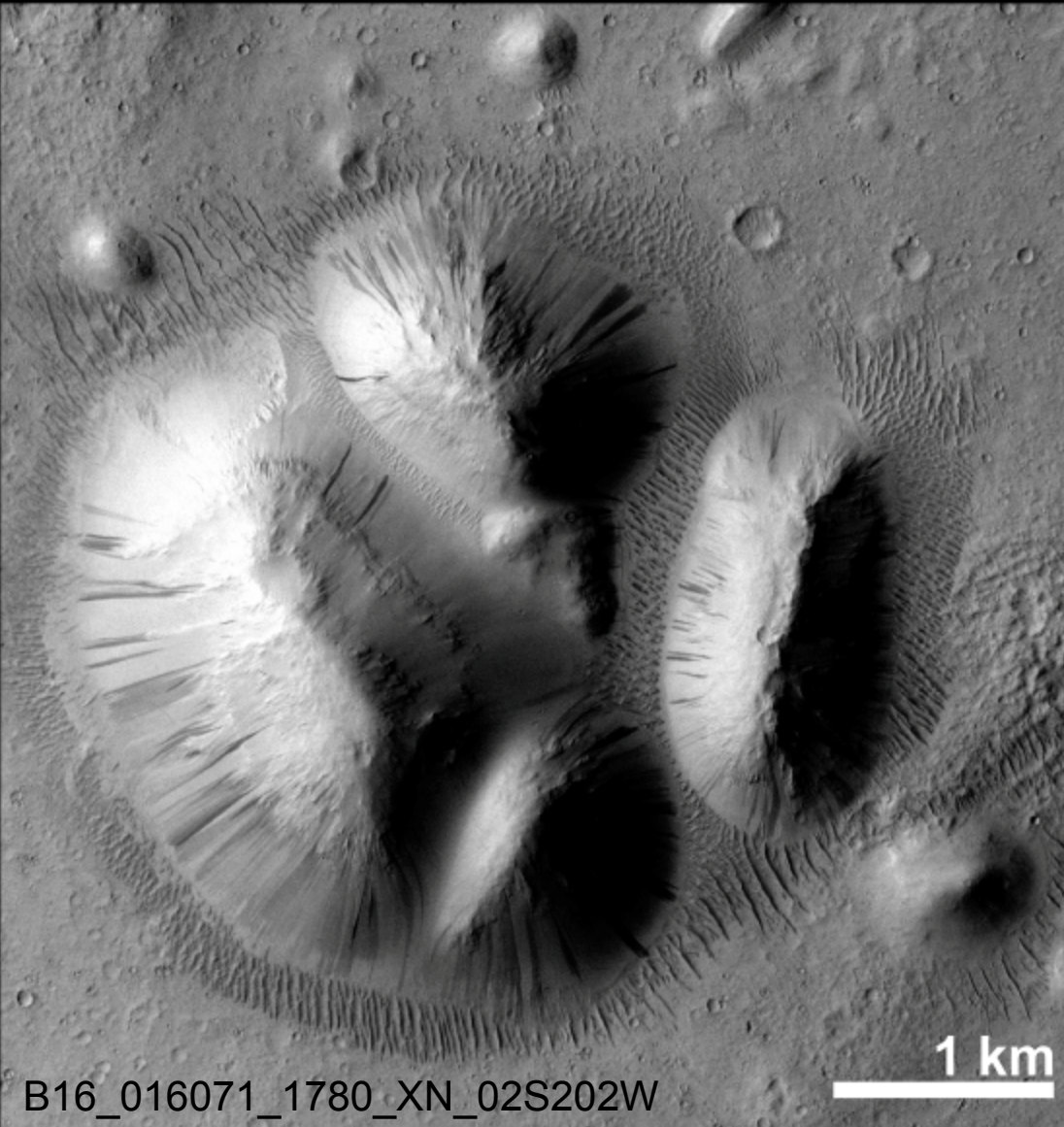




# Solving the problem of dust on work sites and means of communication



# Conclusions



- For the first humanitarian mission and the of the colony foundation the areas this the active hydrovolcanic have advantages of equatorial plains, are provided with large reserves of water and promising for the study of mineral resources and a life in the depths of Mars.
- Therefore exploration of hydrovolcanic from orbit and by robotic missions is acute now, in particular, the important information of Curiosity about Mount Sharp hydrovolcanic.

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